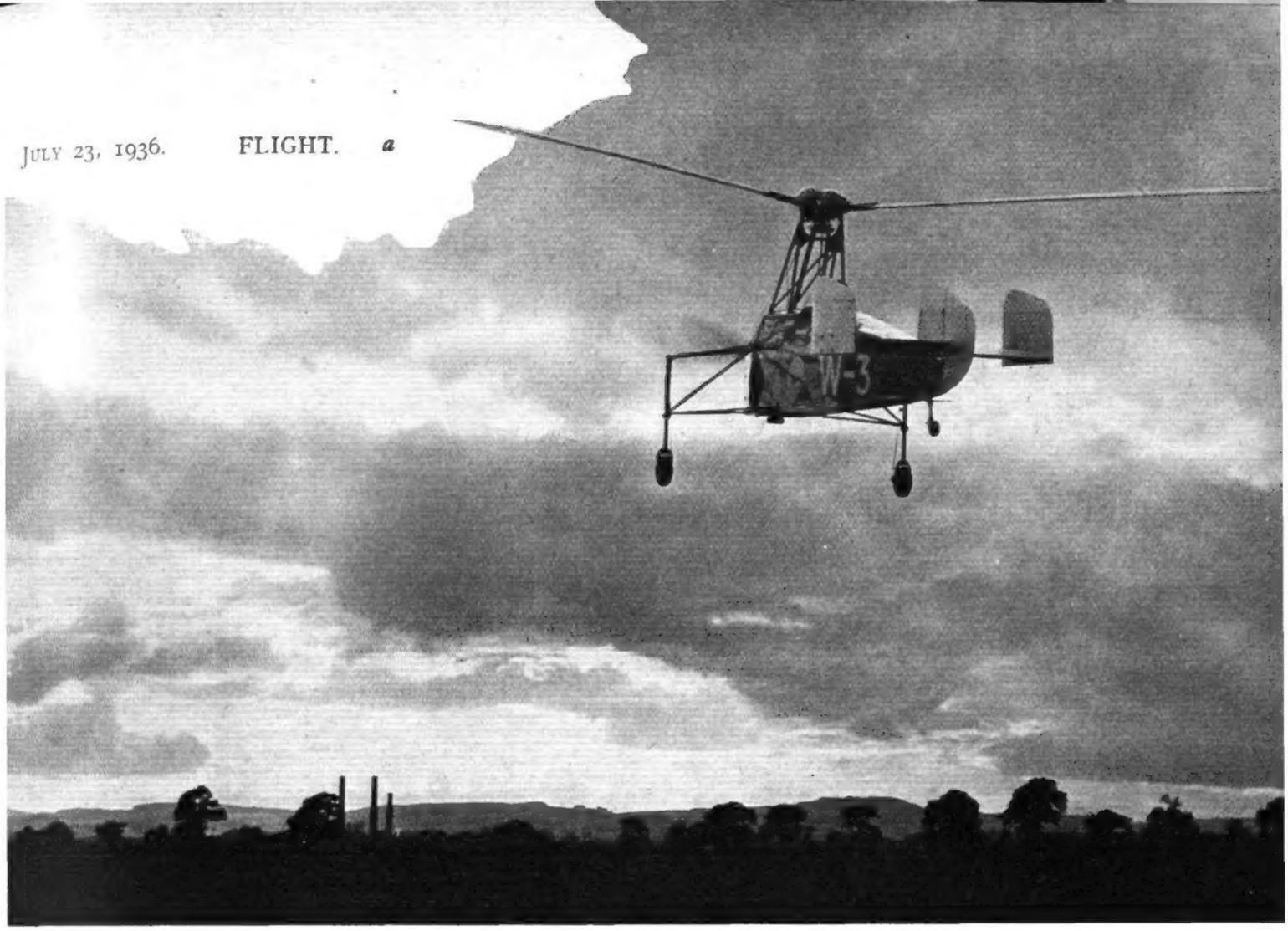

THE NEW AUTOGIROS

Advantages of the "Autodynamic" Rotor Head of New Weir Type : Jump-starts of More Than 20 ft. Altitude : Almost Any Field a "Girodrome"

IT may quite safely be said that no single step in the evolution of the Autogiro has marked such great progress as the introduction of the direct-start, or "jump-start," principle. In Mr. de la Cierva's first British machine, it may be recollected, the rotor was started by hand, a cord being wound around a drum and a number of men "running out" with the rope. The speed thus attained was not great, and it was necessary to taxi around the field for quite a time before the rotor speed was sufficient to lift the machine into the air. The next step was the biplane tail, in which one of the surfaces could be tilted in such a way as to deflect the airscrew slipstream on to the rotor blades and start them moving. This was an improvement in that the pilot was able to start his rotor without outside help, but the rotor speed was still rather low. Then came the introduction of the engine-driven rotor head; this enabled the rotor to be speeded up to any desired extent, and brought about the possibility of take-offs with very short runs. At the same time, the suppression of fixed wings and the use of direct control of the rotor head was a great improvement.

Last year Mr. de la Cierva announced that he had succeeded in making starts without any forward runs. In his lecture to the Royal Aeronautical Society he disclosed the fact that this was done very simply by merely sloping the hitherto vertical hinges in the blade roots. While the blades were being driven by the engine they lagged behind, and the sloping hinges had the effect of reducing the angle of incidence, so that the rotor could be speeded-up to almost any desired extent within reason. As soon as the drive was removed by declutching, the blades "caught up," and in so doing they increased their angle of incidence. The energy stored in the rotor was very considerable, and was sufficient to lift the whole machine several feet before the rotor had slowed to normal flying speed.

Responsible for the Weir W.3: from left to right, Mr. G. E. Walker, Mr. F. L. Hodgess, Air Commodore J. G. Weir, Mr. C. G. Pullin, Dr. J. A. J. Bennett ("mathemagician"), and Mr. H. A. Marsh, who has carried out the test flights. (*Flight* photograph.)